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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO
10/718,000	11/21/2003	Boerge Kringelum	KRINGELUM=1B	7648
1444 7590 12/12/2007 BROWDY AND NEIMARK, P.L.L.C.		EXAMINER		
624 NINTH STREET, NW			ARIANI, KADE	
SUITE 300 WASHINGTON, DC 20001-5303			ART UNIT	PAPER NUMBER
			1651	
			MAIL DATE	DELIVERY MODE
			12/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

	Application No.	Applicant(s)				
Office Author Occurrence	10/718,000	KRINGELUM ET AL.				
Office Action Summary	Examiner	Art Unit				
	Kade Ariani	1651				
The MAILING DATE of this communication appears on the cover sheet with the correspondence address Period for Reply						
A SHORTENED STATUTORY PERIOD FOR REPLY WHICHEVER IS LONGER, FROM THE MAILING DA  - Extensions of time may be available under the provisions of 37 CFR 1.13 after SIX (6) MONTHS from the mailing date of this communication.  - If NO period for reply is specified above, the maximum statutory period w  - Failure to reply within the set or extended period for reply will, by statute, Any reply received by the Office later than three months after the mailing earned patent term adjustment. See 37 CFR 1.704(b).	ATE OF THIS COMMUNICATION 36(a). In no event, however, may a reply be tim rill apply and will expire SIX (6) MONTHS from cause the application to become ABANDONEI	I. the mailing date of this communication.  C (35 U.S.C. § 133).				
Status						
1) Responsive to communication(s) filed on <u>24 September 2007</u> .						
2a) This action is <b>FINAL</b> . 2b) This	action is non-final.					
	3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is					
closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11, 453 O.G. 213.						
Disposition of Claims						
4) Claim(s) 18-45 is/are pending in the application.						
4a) Of the above claim(s) <u>18-24 and 35-45</u> is/are withdrawn from consideration.						
5) Claim(s) is/are allowed.						
6)⊠ Claim(s) <u>25-34</u> is/are rejected.						
7) Claim(s) is/are objected to.						
8) Claim(s) are subject to restriction and/or election requirement.						
Application Papers						
9)☐ The specification is objected to by the Examiner.						
10) ☐ The drawing(s) filed on is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.						
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).						
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).						
11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.						
Priority under 35 U.S.C. § 119						
12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f). a) All b) Some * c) None of:						
1. Certified copies of the priority documents have been received.						
2. Certified copies of the priority documents have been received in Application No						
3. Copies of the certified copies of the priority documents have been received in this National Stage						
application from the International Bureau (PCT Rule 17.2(a)).						
* See the attached detailed Office action for a list of the certified copies not received.						
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Attachment(s)						
1) Notice of References Cited (PTO-892) 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)	4) Interview Summary Paper No(s)/Mail Da					
3) Information Disclosure Statement(s) (PTO/SB/08)  5) Notice of Informal Patent Application						
Paper No(s)/Mail Date 6) Other:						

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## **DETAILED ACTION**

The amendment filed on 09/24/2007, has been received and entered.

Claims 25-34 are pending in this application and were examined on their merits.

## 37 CFR 1.132 Declaration

The declaration filed on 09/24/2007 under 37 CFR 1.132 has been considered and is effective to overcome the Donnelly reference.

Applicant's arguments filed on 09/24/2007 have been fully considered but are most in view of the new ground(s) of rejection.

## Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 25-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marshall V. M. (FEMS Microbiology Letters, 1987, Vol. 46, p.327-336) in view of De Vos et al. (Antonie van Leeuwenhoek, 1996, Vol. 72, p. 223-242) and further in view of Wessels et al. (US Patent No. 5,580,787).

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Claims 25-34 are drawn to a starter culture composition comprising a lactic acid bacterium and a lactic acid bacterial helper organism that is defective in its pyruvate metabolism and does not produce lactic acid, the helper organism is defective in its ability to produce at least one enzyme selected from the group consisting of pyruvate formate lyase, pyruvate dehydrogenase, lactate dehydrogenase, acetolactate synthetase, second acetolactate synthetase, acetolactate decarboxylase and diacetyl reductase, the helper organism is *Lactococcus lactis* subsp. *lactis* strains DN223 and DN224, in the helper organism the gene coding for an enzyme that is capable of regenerating NAD<sup>+</sup> is over-expressed, the enzyme catalyses the reduction of 0<sub>2</sub> to H<sub>2</sub>0 or H<sub>2</sub>0<sub>2</sub>, the enzyme is NADH: H<sub>2</sub>0 oxidase, the helper organism is an Ldh (-) strain, and the composition comprises two or more different lactic acid bacterial strains.

Marshall teaches mixed starter culture composition comprising two lactic acid bacterial strains capable of enhancing the growth and metabolic activity of one another. Marshall teaches as separate cultures, the growth of these strains was poor, but they grew well together and their complementary metabolism resulted in a mild, well-flavored product with good aroma (p.333 2<sup>nd</sup> column, 2<sup>nd</sup> paragraph, lines 1-12).

De Vos et al. teach lactic acid bacteria defective in its ability to produce lactate dehydrogenase (an Ldh (-) strain), and wherein the gene coding for NADH: H<sub>2</sub>0 oxidase is over-expressed (p.238, 1<sup>st</sup> column, lines 24-30). De Vos et al. further teach methods for metabolic engineering and rerouting of metabolic processes in lactic acid bacteria (p.232 column, 2<sup>nd</sup> paragraph, also p.233, 1<sup>st</sup> column, 2<sup>nd</sup> paragraph).

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Wessels et al. teach, presently used procedures for developing useful lactic acid bacteria cultures by selection of naturally occurring strains is cumbersome and costly. Furthermore, it has proven difficult to provide starter cultures strains which combine all required characteristics at an optimal level. Presently, this problem is usually solved by the use of starter cultures comprising a multiplicity of selected lactic acid bacterial strains each having one or several of the characteristics desirable for a particular food products (column 1, lines 51-60).

Therefore, it would have been obvious to one of the ordinary skill in the art to use the teachings of de Vos et al. and Marshall to provide a starter culture composition comprising a lactic acid bacterium and a lactic acid bacterial helper organism capable of enhancing the growth rate and metabolic activity of the lactic acid bacterium. Since as taught by Wessel et al. it has proven difficult to provide starter cultures strains which combine all required characteristics at an optimal level. The motivation would be the use of starter cultures comprising a multiplicity of lactic acid bacterial strains each having one or several of the characteristics desirable for a particular food products

## Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kade Ariani whose telephone number is (571) 272-6083. The examiner can normally be reached on 9:00 am to 5:30 pm EST Mon-Fri.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Wityshyn can be reached on (571) 272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kade Ariani Examiner Art Unit 1651 Leon B. Lankford Jr. Primary Examiner

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